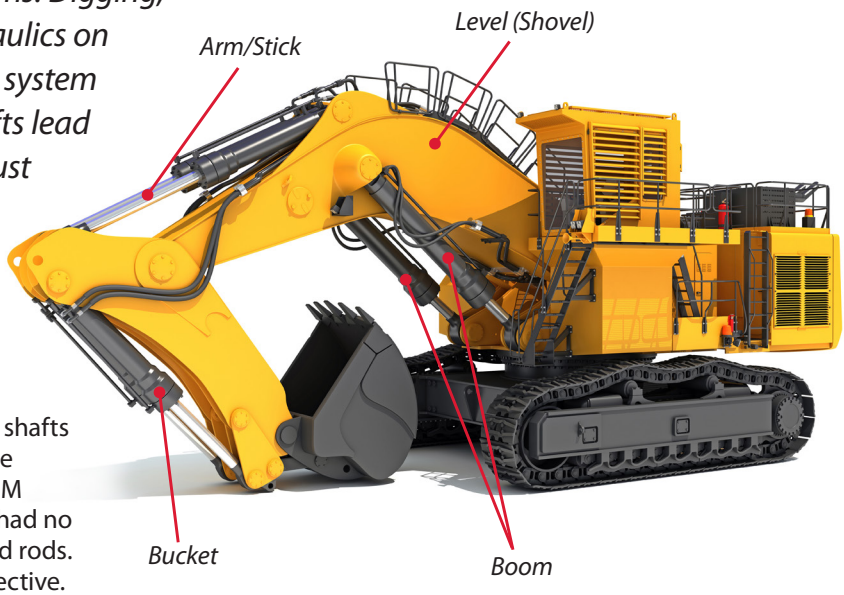
CHESTERTON® MOBILE MINING SEALING SOLUTIONS FOR EXCAVATORS

ELEVATING EXCAVATOR ENDURANCE: NAVIGATING HYDRAULIC HURDLES IN MINING OPERATIONS

Every minute counts in global mining operations. Digging, lifting, and loading induce challenges to hydraulics on excavators for continued operation. Hydraulic system leaks from damaged seals or wear on the shafts lead to slow bucket movement. The need for a robust hydraulic and sealing system are crucial in extending excavator operational time.



Challenge

Issue

A mine was experiencing severe leakage of worn, scored shafts in the boom cylinder of a large mining excavator. Leakage caused an unplanned shutdown and production loss. OEM rubber seals were leaking shortly after installation. They had no ability to conform to surface irregularities of the damaged rods. Upon inspection, the OEM rubber wiper was found ineffective. It led to scoring of the piston rod in an abrasive environment.

Solution

Recommendation

A Chesterton specialist recommended a cylinder upgrade solution with the ability for on-site installation, reducing mean time to repair. This included:

- A high-performance, split wiper used in combination with a split stacked set.
- **21K Wiper Seal** – A positive rake profile that effectively wipes away contaminants and protects the cylinder.
- **11K Split Stack Set** – Chesterton's patented split seal assembly is best suited for new and worn shafts. This dual material combination is made to order and eliminates the need for any shimming.

Results

The end-user was extremely satisfied with the performance, which resulted in less frequent downtime and shorter seal replacement works on site.

- Improved performance and reliability.
- Postponed the capital repair of large diameter, heavy-duty hydraulic cylinders.

The Chesterton Advantage

- Extend equipment service life and reliability.
- Reduce maintenance costs and downtime.
- Improve equipment productivity and efficiency.

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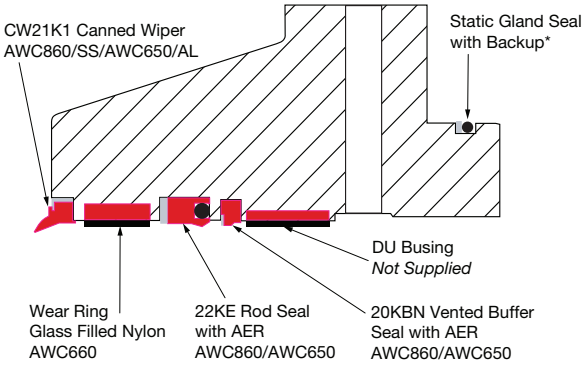
Common Seal Configuration

Typical installation for boom/stick/bucket, level and clam cylinders on hydraulic excavators

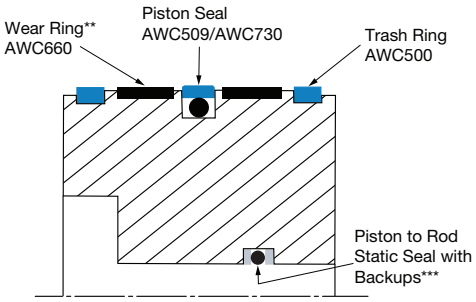
Customer: _____
Machine Model: _____
Cylinder Function: _____
Rod Diameter: _____
Bore Diameter: _____

Rod Seal Configuration



*Kits have two sizes 5.70 mm and 8.40 mm (0.224 inches and 0.330 inches) O-Ring sizes.

Piston Seal Configuration



** 2.50 mm (0.098 inch) or 3.00 mm (0.118 inch) cross section.
*** Some cylinders do not have.

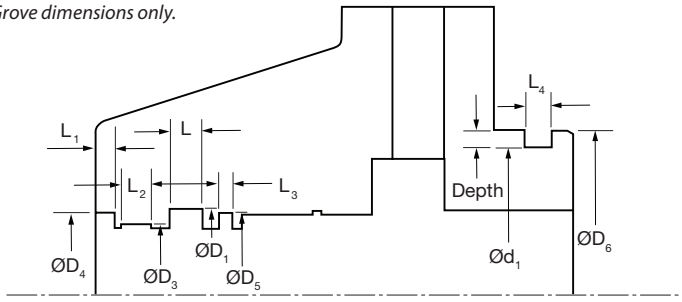
Rod Dimensions

Cylinder measurements for steering and hoist cylinder to be recorded for orders.

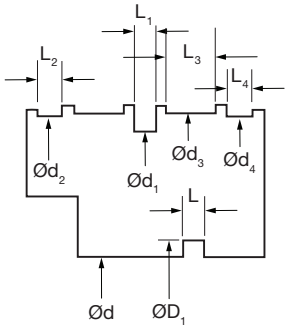
Rod

ØD1: _____	L: _____	Ød1: _____
ØD3: _____	L1: _____	ØD6: _____
ØD4: _____	L2: _____	Depth: _____
ØD5: _____	L3: _____	L4: _____

Grove dimensions only.



Piston Dimensions



Grove dimensions only.

Model: _____
Cylinder No.: _____
Bore: _____
Ød: _____
Ød1: _____
Ød2: _____
Ød3: _____
Ød4: _____
L: _____
L1: _____
L2: _____
L3: _____
L4: _____

Technical Specifications

Most common seal profiles and materials.

Seal Type	Recommended Profile	Recommended Material	Benefits
Canned Wiper	CW21K	AWC860/SS/CRS/Al	Interference press fit design for open grooves and space saving. Excellent single acting abrasion resistant design to help prevent contaminants from entering the equipment.
Rod Seal	22KE	AWC860 (High Temperature EU – 250˚F)	O-Ring energized high pressure and temperature abrasion resistant design.
Piston Seal	CCS	AWC509/AWC730 Bronze Moly PTFE/FKM	High strength material for bi-directional sealing. Compression seal design increases sealing force with system pressure.
Static Seals	O-Ring with BUR or 22KE	NBR 90A BUR: Urethane/AWC860	High performance O-Ring upgrade with high temperature material.
Wear Bands	WR/MWR	AWC660 40% Glass Filled Nylon	Precision machined high compressive strength replaceable design to prevent metal to metal contact.
Buffer Seal	20KBNAER	AWC860/ AWC650 BUR	Buffer seals with backup ring to minimize the impact of shock loads on the rod seals.

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